

**PATENT APPLICATION
Q-53818**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Takayuki KIFUKU

Appln. No.:

Group Art Unit:

Filed: April 6, 1999

Examiner:

For: ELECTRIC POWER STEERING SYSTEM



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U.S.

INFORMATION DISCLOSURE STATEMENT
UNDER 37 CFR §§ 1.97 and 1.98

Assistant Commissioner of Patents
Washington, D.C. 20231

Sir:

Pursuant to Applicants' duty of voluntary disclosure under Rule 56, and for the Examiner's convenience, we submit herewith:

- a) a form PTO-1449 listing four (4) references of potential relevancy; and,
- b) a complete copy of each reference.

No certification or fee is required.

Regarding the concise explanation of relevancy requirement for foreign language documents, an English language summary is attached for each reference (Japanese 8-175404 corresponds to U.S. Patent No. 5,740,040).

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "Robert J. Seas, Jr.", written over a horizontal line.

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INFORMATION DISCLOSURE STATEMENT

Given below are prior Arts with their brief descriptions.

Japanese Literature

(1) Japanese Laid-open Patent Application No.3-42235

Control unit for power steering device driver by an electric motor.

Determine the electric current to be supplied to an electric motor through addition of the current command value obtained from the steering torque and the current command value obtained from the differentiated value of the steering torque.

Claim 1.

A control unit for a power steering unit driver by an electric motor comprises a control circuit for controlling a current to be supplied to the electric motor on the basis of the value obtained by addition of the current command value in assisting direction supplied from the assisting direction motor current command section which supplies the motor current command value in the assisting direction according to the torsional signal from the torsional torque sensor and the phase compensation current command value from the phase compensation function command section.

Claim 2.

A control unit for a power steering unit driver by an electric motor comprises a control circuit for controlling the current value to be supplied to the electric motor on the basis of the value obtained addition of the motor current command value in the assisting direction supplied from the assisting direction motor current command section which supplies the motor current command value in the assisting direction according to the value obtained by adding the signal from the phase compensation section to the torsional torque signal from the torsional torque sensor and the phase compensation current value from the phase compensation function

command section.

(2) Japanese Laid-open Patent Application No. H4-72749

Determine the electric current to be supplied to the electric motor by adding / subtracting the functional value of a vehicle speed and the functional value of the differentiated value of the torque to / from the electric current command signal proportional to the output of the torque sensor

Claim 1

A control unit for power steering driver by an electric motor comprises an addition and subtraction means for generating a current command proportional to an output of the torque sensor and for performing the addition and subtraction of an output of a function generator, which varies output depending on a vehicle speed, and the value obtained through differentiation of the output of the torque sensor.

The present invention is characterized in that even during a high speed cruising of a vehicle the inertia of the electric motor can be eliminated by performing addition / subtraction operation of a differentiated output of the torque sensor on an output of the function generator depending on an output of the torque sensor and the vehicle speed.

(3) Japanese Laid-open Patent Application No. H8-175404

This is the application with Japan as the first application country for the concurrently filed USP 5,740,040.

Estimate the motor angular velocity from the detection value of the motor application voltage which is LPF processed by H/W and determine the electric current to be supplied to the motor from the detection value of the steering torque and the estimated value of the motor angular velocity.

Foreign Literature

(2) United States Patent 5,740,040

Estimate the motor angular velocity from the detection value of the motor application voltage which is LPF processed by G.W and determine the electric current to be supplied to the motor from the detection value of the steering torque and the estimated value of the motor angular

velocity.